

Article 50.—GENERAL REQUIREMENTS FOR ALL BOILERS

49-50-1 Major repair to boilers and pressure vessels.

(a) Boiler and pressure vessel repairs or alterations shall be made so that each boiler or pressure vessel conforms to original specifications. Any repairs or alterations not covered by this regulation shall be subject to the requirements for new construction.

(b) Welding. (1) Repairs or alterations by fusion welding shall be approved by an authorized inspector before beginning the work. All welding repairs or alterations shall be made in accordance with the appropriate section of “repairs and alterations to boilers and pressure vessels by welding,” part RC, of the national board inspection code.

(2) All welding shall be done by either of the following:

(A) An organization holding the applicable ASME certificate of authorization or the national board “R” or “NR” stamp; or

(B) an owner or user who has demonstrated to the satisfaction of the chief state boiler inspector all of the following:

(i) The owner or user maintains an acceptable quality control system.

(ii) Welding work completed by the owner or user is in compliance with ASME standards for welding.

(iii) Before the welding operations, the owner or user has assured that all welders are qualified by compliance with ASME standards.

(iv) The owner or user has notified the applicable insurance company boiler inspector or state boiler inspector before doing any welding.

The organization performing the repair shall be responsible for filing the national board's repair or alteration form with the office of the chief state boiler inspector.

(c) Each welder or welding operator shall qualify for each welding process used in the repair or alteration of a boiler or pressure vessel. The qualifications for welders shall be those established in section IX of the ASME code, and by a qualified welding procedure specification of the organization making the repair or alteration.

(d) Each organization making repairs or alterations under this regulation shall list the parameters applicable to welding that are to be performed in the welding procedure specification (WPS) documents. The documents shall have been qualified by the organization as required by the applicable section of the ASME code. The organization shall qualify its WPS by the welding of test coupons, the testing of specimens, and recording the welding data and test results in its procedure qualification record (PQR) document.

(e)(1) The organization making the repair or alteration shall adopt specific procedures for performing welding operations in the shop or the field. The procedure specification shall comply with the requirements of section IX of the ASME code and the national board inspection code.

(2) The procedure specifications shall be written and shall provide all pertinent details about the methods and procedure to be used, including the following:

(A) The type of electrode or rod to be used the shape of the welding groove

(B) the number and sequence of the beads

(C) the manner in which slag is to be cleaned

(D) peening and current characteristics, if electric welding; and

(E) if gas welding, the size of the tip, the nature of the flame, and the designation of forehand or backhand technique used.

(3) The procedure specification shall ensure that weld metal and welded joints comply with the characteristics required by section IX of the ASME code and the national board inspection code.

(4) A test demonstrating the sufficiency of the procedure specification shall be witnessed by the inspector, or authentic evidence documenting the sufficiency of the specifications shall be provided to the inspector.

(f) The material used for patches shall be of the same general quality, shall have, at least, the minimum physical properties of the plate to be patched and shall be traceable. The thickness of any patch shall be at least equal to, but not more than, 1/8 inch greater than the plate being patched. Flush or butt-welded patches in unstayed shells, drums, or headers shall be radiographed and stress-relieved to conform to the requirements of the national board inspection code, part RC, 1998 edition. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-2 Combustion air supply and ventilation of boiler room. (a) A permanent source of outside air shall be provided for each boiler room to permit satisfactory combustion of the fuel as well as proper ventilation of the boiler room under normal operating conditions. One opening shall be 12 inches above floor level, and one opening shall be 12 inches below ceiling level. The opening 12 inches below ceiling level shall be at least 1/3 of the area of the lower opening. The size of the lower opening shall not be less than is required in subsection (b) below, or as required in NFPA 31, 1997 edition, and NFPA 54, 1996 edition, both of which are hereby adopted by reference.

(b) The total requirements of the burners in the boiler room shall be used to determine the louver sizes, whether fired by coal, oil, or gas. However, the minimum net free-louvered area of the lower opening shall not be less than one square foot. The following table or either of the following formulas shall be used to determine the net louvered area of the lower opening in square feet, or as required in NFPA 31 and NFPA 54:

INPUT BTU/Hour	REQUIRED AIR CU. FT./MIN.	MIN. NET LOUVERED AREA SQ. FT.
500,000	125	1.0
1,000,000	250	1.0
2,000,000	500	1.6
3,000,000	750	2.5
4,000,000	1,000	3.3
5,000,000	1,250	4.1
6,000,000	1,500	5.0
7,000,000	1,750	5.8
8,000,000	2,000	6.6
9,000,000	2,250	7.5
10,000,000	2,500	8.3

$$\frac{(\text{BTUH} \div 100) \times 1.5 \text{ MIN. NET AREA}}{60 \div 300} \text{ REQ. SQ. Ft.}$$

(c) When mechanical ventilation is used in lieu of the requirements of subsection (b), the supply of combustion and ventilation air to the boiler room and the firing device shall be interlocked with the fan so that the firing device will not operate with the fan off. The velocity of the air through the ventilating fan shall not exceed 500 feet per minute, and the total air delivered shall be equal to or greater than that shown in subsection (b) above. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-3 Boiler combustion chamber vents. Each boiler shall be equipped with vents to convey the products of combustion safely from the boiler furnace to the outside atmosphere. Flue piping, draft hoods, draft diverters, and chimney connections shall be installed according to the boiler manufacturer's

instructions and the provisions of the national fire codes, NFPA 31, "standard for the installation of oil-burning equipment," and NFPA 54, "national fuel gas code." (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-4 Cross-connection control. (a) A person shall not install any water-operated equipment or mechanism, or use any water-treating chemical or substance, if it is found that this equipment, mechanism, chemical, or substance may cause pollution of the domestic water supply. The equipment or mechanism may be permitted only when equipped with an approved backflow prevention device.

(b) Each backflow prevention device installed in a potable water supply system shall be maintained in good working condition by the person or persons having control of the device. The devices may be inspected by authorized inspectors and, if found to be defective or inoperative, shall be repaired or replaced as directed by the inspector. A device shall not be removed from use or relocated or another device substituted without formal notification to the office of the responsible authorized inspection agency.

(c) Potable water piping shall not be installed or maintained within any piping or device conveying sewage, wastes, or other materials hazardous to health and safety.

(d) Each hot water heating and steam boiler connection shall be protected by an approved backflow prevention device as set forth in subsection (e) of this regulation and shall be tested and inspected by a qualified inspector.

(e) Nonpotable water piping. If it is impractical to correct individual cross-connections on the domestic water line, the line supplying these outlets shall be considered a nonpotable water line. Drinking or domestic water outlets shall not be connected to the nonpotable water line. Backflow or back-siphonage from the nonpotable water line into the domestic water line shall be prevented by the installation of a gravity tank or by a tank having a pump designated for nonpotable water. The domestic water inlets to the nonpotable water tank shall have an approved air gap as specified within the ASME code and the international plumbing code. Whenever it is impractical to install this tank, an approved pressure-type backflow or back-siphonage prevention device shall be installed as follows:

(1) If reverse flow is possible only as a result of gravity or a vacuum within the line, an approved pressure-type vacuum breaker unit or other approved backflow prevention device shall be installed in the supply line.

(2) Each pressure-type vacuum breaker unit shall be installed at a height of at least 12 inches (.3m) above the highest tank, equipment, or other point at which the nonpotable water is used. Other approved backflow prevention devices shall be installed in a manner satisfactory to the responsible authorized inspection agency, but in no case less than 12 inches (.3m) above the surrounding ground or floor.

(3) If backflow can occur, creating a higher pressure in the nonpotable water line, an approved backflow prevention device shall be installed in the supply line. The backflow prevention device shall be installed at least 12 inches (.3m) above the surrounding ground or floor, or higher than five feet above the floor or surrounding ground, unless a work platform and ladder are provided.

(f) Whenever possible, all portions of the nonpotable water line shall be exposed, and all exposed portions shall be properly identified in a manner satisfactory to the responsible authorized inspection agency. Each outlet on the nonpotable water line that could be used for drinking or domestic purposes shall be posted with the following sign: DANGER--WATER UNSAFE.

(g) An approved backflow prevention device shall conform to the requirements of the American society of sanitary engineering (ASSE) publication 1013, as revised October 1993, and the American water works association (AWWA) publication C511-97, effective February 1, 1998, which are hereby adopted by reference. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-6 Hydrostatic pressure tests and inspection. (a) When there is doubt as to the extent of a defect

or deterioration found in a pressure vessel, a pressure test may be required by the inspector. A pressure test shall not be required as part of a normal periodic inspection. A test shall be required when either of the following conditions is met:

- (1) Forms of deterioration are found that could affect the safety of a vessel,
- (2) Major repairs have been completed.
- (b) Pressure test considerations shall be as follows:
 - (1) To determine tightness, the test pressure shall not be required to be greater than the set pressure of the safety valve having the lowest setting.
 - (2) The pressure test shall not exceed $1\frac{1}{2}$ times the maximum allowable working pressure, as adjusted for temperature. When the original test pressure included consideration of corrosion allowance, the test pressure may be further adjusted based on the remaining corrosion allowance and other requirements set forth in NBIC, part RC, 1998 edition, as in effect on January 1, 1999.
 - (3) If the test pressure will exceed the set pressure of the safety valve having the lowest setting, the safety relief valve or valves shall be removed during the test or each disc held down by means of a test clamp and not by applying additional load to the valve spring by turning the compression screw.
 - (4) The temperature of the water used to apply a hydrostatic test shall not be less than 60° F unless the owner provides information on the toughness characteristics of the vessel material to indicate the acceptability of a lower test temperature. The metal temperature shall not exceed 120° F unless the owner specifies the requirements for a higher test temperature acceptable to the inspector.
 - (5) When contamination of the vessel contents by any other medium is prohibited or when a hydrostatic test is not possible, other testing media may be used if the precautionary requirements of the applicable sections of the ASME code and NBIC are followed. In these cases, there shall be agreement as to the testing procedure among the owner, repair organization, and the inspector.
- (c) Record review. Any boiler log, record of maintenance, corrosion rate record, or any other examination results shall be reviewed by the inspector. The owner or user shall consult with the inspector regarding repairs, if any, made since the last internal inspection. Records of the repairs shall be reviewed for compliance with applicable requirements.
- (d) Conclusions. Any defects or deficiencies in condition, maintenance practices, or misuse of the boiler shall be discussed by the inspector and owner, and, if necessary, corrective action shall be taken. All repairs shall be carried out in accordance with the requirements of part RC of the NBIC. (Authorized by K.S.A. 1999 Supp. 44-916; implementing K.S.A. 1999 Supp. 44-916 and 44-923; effective May 1, 1987; amended April 28, 2000.)

49-50-7 Boiler blowoff equipment; general rules. (a) The blowdown from a boiler or boilers that enters a sanitary sewer system or blowdown that is considered a hazard to life or property shall pass through some form of blowoff equipment that will reduce pressure and temperature as required by this regulation.

- (b) The temperature of the water leaving the blowoff equipment shall not exceed 140° F.
- (c) The pressure of the blowdown leaving any type of blowoff equipment shall not exceed 5 psig.
- (d) The blowoff piping and fitting between the boiler and boilers and the blowoff tank or tanks shall comply with paragraphs PG-58 and PG-59 of the ASME boiler and pressure vessel code, section I. Blowdown piping shall not be galvanized.
- (e) All blowoff tank construction shall comply with ASME pressure vessel code, section VIII, division 1 and all materials used in the fabrication of boiler blowoff equipment shall comply with section II of the ASME boiler and pressure vessel code, as in effect on January 1, 1999.
- (f) When a steam separator is used, it shall be designed to withstand at least twice the operating pressure of the boiler. The steam separator shall be equipped with a vent, an inlet and outlet, and a pressure gauge.
- (g) All blowoff equipment shall be fitted with openings to facilitate cleaning and inspection.
- (h) The “national board rules and recommendations for the design and construction of boiler blowoff

systems,” published in 1991 by the national board of boiler and pressure vessel inspectors, is adopted by reference, a copy of which may be obtained from the national board of boiler and pressure vessel inspectors or from the chief inspector. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-8 Piping system. (a) Piping connected to the outlet of a boiler shall be attached by one of the following methods:

- (1) Screwing into a tapped opening with a screwed fitting or a valve at the other end
- (2) screwing each end into tapered flanges, fittings, or valves with or without rolling or peening
- (3) bolted joints, including those of the van stone type; or
- (4) expanding into grooved holes, seal welded, if desired.

(b) Pipe that is expanded, rolled, or peened shall be made from open-hearth or electric-furnace steel. Blowoff piping of fire-tube boilers that is exposed to products of combustion shall be attached by the method in paragraph (a)(1). The attachment methods in paragraphs (a)(2), (3), or (4) may be used for blowoff piping of fire-tube boilers that is not exposed to combustion products. Fusion welding may be used for sealing purposes at the junction of bolted joints.

(c) Welding may be used to attach piping to nozzles or fittings if the rules adopted for fusion welding or forge welding at K.A.R. 49-50-1(b)(1) are followed. All welded piping that is external to the boiler, from the boiler out to the first stop valve, in a single installation, and out to the second stop valve when two or more boilers with manholes are connected to a common steam or high temperature water main or header, shall be installed by a manufacturer or contractor authorized to use any one of the American society of mechanical engineers code symbol stamps for pressure piping (“PP”), power boilers (“S”), or assembly stamp (“A”). The piping or fittings that are adjacent to the welded joint farthest from the boiler shall be stamped with the pressure piping, power boiler, or assembly code symbol stamp of the American society of mechanical engineers when approved by the inspector.

(d) Power boiler piping shall be inspected in all segments of the system carrying substantially the same pressures and temperature encountered in the boiler. The piping shall be inspected to the extent necessary to assure compliance with engineering design, material specifications, fabrication, assembly, and test requirements of section I of the ASME boiler and pressure vessel code, “rules for construction of power boilers,” for the piping between the boiler and the first stop valve in a single boiler installation, or the second stop valve in a multiple boiler installation. Power piping and piping beyond these limits shall be installed as required by the appropriate section of ASME B31.1 power piping.

(e) When welded assembly is used, the contractor who welded the pipe shall present welding procedure specification and proof of the welder's qualifications to the inspector for review. The contractor shall be responsible for the quality of the welding performed by the contractor's organization.

(f) Visual inspection of welding performed by qualified welders shall be deemed sufficient unless codes or engineering specifications state otherwise or unless the inspector wishes to augment this visual inspection with other non-destructive tests, including radiography. All tests or retests required by the inspector shall be at the owner's or contractor's expense.

(g) Signed certification of the contractor regarding satisfactory hydrostatic tests performed on piping may be accepted by the inspector. These tests may be required by the inspector to be performed in the inspector's presence.

(h) Heating boiler piping shall be inspected in all segments of the piping system carrying substantially the same pressure and temperatures as the boiler. The piping shall be inspected to the extent necessary to insure good fit-up, assembly, tightness, and support of the system. Welded joints shall be visually inspected for soundness of the weld and freedom from undercutting, cracking, and other surface imperfections. All inspections of piping shall be conducted to the first stop valve on a single boiler installation or the second stop valve in a multiple boiler installation.

(i) Hot water supply boiler installations shall be inspected for conformance with section IV of the ASME

heating boiler code. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-9 Notification of inspection requirements. (a) A certificate inspection shall be carried out before the expiration date of the certificate. Internal certificate inspections shall be scheduled in advance by the inspector. External inspections may be performed by the inspector during normal business hours without prior notification to the owner or user.

(b) An internal inspection, appropriate pressure test, or both may be requested by the inspector when an external inspection or determination by other objective means indicates that continued operation of the boiler constitutes a menace to public safety. In these instances, the owner or user shall prepare the boiler for the inspections, tests, or both as the inspector designates.

(c) Inspections of boilers and pressure vessels. All boilers and pressure vessels that are not exempted by the act and that are subject to regular inspections shall be prepared for inspection as required in subsection (d).

(d) Preparation for inspections. The owner or user shall prepare each boiler for inspection. The owner or user shall prepare for and apply a hydrostatic pressure test on the date arranged by the inspector. The date shall not be fewer than seven days after the date of notification. The owner or user shall prepare a boiler for internal inspection in the following manner:

(1) Water shall be drawn off, and the boiler shall be washed thoroughly.

(2) The manhole and handhole plates, washout plugs, and inspection plugs in water column connections shall be removed as required by the inspector. The furnace and combustion chambers shall be cooled and thoroughly cleaned.

(3) All grates of internally fired boilers shall be removed.

(4) Insulation or brickwork shall be removed as required by the inspector in order to determine the condition of the boiler, headers, furnace, supports, or other parts.

(5) The pressure gauge shall be removed for testing, as required by the inspector.

(6) Any leakage of steam or hot water into the boiler shall be prevented by disconnecting the pipe or valve at the most convenient point or by any other appropriate means approved by the inspector.

(7) The non-return and steam stop valves shall be closed, tagged, and preferably padlocked, and the valves drained or the cocks between the two valves opened. Before opening the manhole or handhole covers and entering any part of the steam-generating unit connected to a common header with other boilers, the feed valves shall be closed, tagged, and preferably padlocked, and the valves drained or the cocks located between the two valves opened. After draining the boiler, the blowoff valves shall be closed, tagged and preferably padlocked. Blowoff lines, where practicable, shall be disconnected between pressure parts and valves. All drains and vent lines shall be opened.

(e) Boilers improperly prepared for inspection. If a boiler has not been properly prepared for an internal inspection or if the owner or user has failed to comply with the requirements for a pressure test as set forth in these regulations, the inspection or test may be postponed, and the inspection certificate shall be withheld or the right to operate revoked until the owner or user complies with the requirements.

(f) Removal of covering to permit inspection. If the boiler is jacketed so that the longitudinal seams of shells, drums, or domes cannot be seen, sufficient jacketing, setting wall, or other form of casting or housing shall be removed to permit reasonable inspection of the seams and other areas necessary to determine the condition and safety of the boiler, if this information cannot be determined by other means.

(g) Lapseam crack. If a lapseam crack is discovered along a longitudinal riveted joint in the shell or drum of a boiler, use of that shell or drum shall be immediately discontinued. Patching shall be prohibited.

(h) All lock-out, tag-out, and confined space entry procedures shall be observed. (Authorized by K.S.A. 1998 Supp. 44-916; implementing K.S.A. 1998 Supp. 44-916 and 44-923; effective May 1, 1987; amended April 28, 2000.)

49-50-10 Safety valve repair. (a) All national board capacity-certified ASME code section I, “V” stamped safety valves that are repaired shall be repaired in accordance with the national board of boiler and pressure vessel inspectors “VR” program (NBIC ANSI/NB-23). The repairs shall be performed by an organization in possession of a “VR” certificate of authorization issued by the national board of boiler and pressure vessel inspectors.

(b) Repair of a safety valve or safety relief valve shall be considered to be the replacement, re-machining, or cleaning of any critical part, lapping of the seat and disc, or any other operation that may affect the flow pressure, capacity, function or pressure-retaining integrity of the valve. Disassembly and either reassembly or adjustments, or both, that affect the safety valve or safety relief valve function shall be considered repairs.

(c) The initial installation, testing, and adjustments of a new safety valve or a safety relief valve on a boiler or pressure vessel shall not be considered a repair if made by the manufacturer or assembler of the valve.

(d) Properly trained and qualified employees of boiler users or their designees may be authorized by the secretary to make adjustments to set pressure or blowdown, or both, to safety valves or safety relief valves owned by them if the adjusted settings, capacities, or both and the date of the adjustment are recorded on a metal tag secured to the seal wire. After external adjustment, the valve shall be resealed showing the identification of the organization making the adjustments. Valves intended for steam service shall be tested on steam. Valves intended for air or gas service shall be tested on air or gas. ASME code section IV “HV” and “V” stamped safety valves and relief valves designed for use on low pressure boilers shall be repaired only by the original manufacturer. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-11 Condemned boilers and pressure vessels. Any boiler or pressure vessel that is inspected and declared unfit for further service by the chief inspector or deputy inspector shall be stamped by the inspector with an arrowhead stamp having an overall length of 1/2 inch and width of 3/8 inch on either side of the letters “XXX” and the letters of the state, as shown by the following facsimile: XXX KXXX. Each condemned boiler or pressure vessel shall be immediately taken out of service by shutting off the boiler's or pressure vessel's source of energy, followed by total disconnection of gas, electrical, and system piping. Any person, firm, partnership, or corporation installing or using a condemned boiler or pressure vessel within this state shall be subject to the penalties provided by K.S.A. 44-925, and amendments thereto. (Authorized by K.S.A. 1998 Supp. 44-916; implementing K.S.A. 1998 Supp. 44-925; effective May 1, 1987; amended April 28, 2000.)

49-50-12 Reinstalled boiler or pressure vessel. When a stationary boiler or pressure vessel is moved and reinstalled, it shall be brought up to code and shall be subject to immediate certification inspection upon reinstallation. The owner, user, or installer shall notify the chief inspector of the reinstallation. However, a pressure vessel shall not require inspection if moved to a different location or reinstalled by the same owner. (Authorized by K.S.A. 1998 Supp. 44-916; implementing K.S.A. 1998 Supp. 44-917; effective May 1, 1987; amended April 28, 2000.)

49-50-13 Reinstalled boiler or pressure vessel at same location. If a boiler or pressure vessel located in this state is moved for temporary use or repair, it shall be subject to immediate certification inspection upon reinstallation. The reinstalled boiler or pressure vessel shall be brought up to current code requirements. The pressure vessel shall be subject to a certification inspection, if it has not been previously registered. The owner, user, or installer shall notify the chief inspector of the reinstallation. (Authorized by K.S.A. 1999 Supp. 44-916; implementing K.S.A. 1999 Supp. 44-917; effective May 1, 1987; amended April 28, 2000.)

49-50-14 Shipment of nonstandard boilers or pressure vessels into the state. Shipment of nonstandard, nonexempt boilers or pressure vessels into this state for use shall be prohibited unless a variance and an operating permit have been granted by the secretary or the secretary's designee. (Authorized by K.S.A. 1998 Supp. 44-916; implementing K.S.A. 1998 Supp. 44-917; effective May 1, 1987; amended April 28, 2000.)

49-50-15 Installation of used or secondhand boilers or pressure vessels. A used or secondhand boiler or pressure vessel may be shipped for installation in this state only following an inspection by an inspector qualified by an examination equal to that required by this state or by an inspector holding a national board commission, at the location where originally installed. Data submitted by the inspector shall be filed by the owner, user, or installer of the boiler with the chief inspector of this state for the chief inspector's approval. The boilers or pressure vessels, when installed in the state, shall be subject to inspection by the chief inspector or deputy inspector and shall meet current safety codes as set forth in these regulations. (Authorized by K.S.A. 1998 Supp. 44-916; implementing K.S.A. 1998 Supp. 44-923; effective May 1, 1987; amended April 28, 2000.)

49-50-17 Steam cleaners or hot water power washers. A steam cleaner or hot water power washer in which water can flash into steam when released directly to the atmosphere through a manually operated nozzle, on which adequate controls and safety devices are installed, and on which safety relief valves are installed shall be subject to the boiler safety act when the cleaner or washer exceeds any of the following limitations or conditions:

- (a) The outside diameter of the tubing does not exceed one inch.
- (b) There is no drum, header, or other steam space attached.
- (c) The pipe size does not exceed national standard pipe (NSP) 3/4 inch.
- (d) No steam is generated in the coil.
- (e) Normal water capacity does not exceed six gallons.
- (f) Water temperature does not exceed 350° Fahrenheit.
- (g) BTUH input equals or exceeds 400,000. (Authorized by K.S.A. 1998 Supp. 44-916; implementing K.S.A. 1998 Supp. 44-915; effective May 1, 1987; amended April 28, 2000.)

49-50-18 Minimum construction standards for all boilers and pressure vessels. (a) Each new boiler or pressure vessel installed for operation in this state, unless otherwise exempt, shall be designed, constructed, inspected, stamped, and installed in accordance with the applicable ASME code and addenda thereto and these regulations. Each boiler or pressure vessel shall bear the manufacturer's NB number as registered with the national board. A copy of the manufacturer's data report, signed by the manufacturer's representative and the national board-commissioned inspector, shall be filed with the chief inspector through the national board of boiler and pressure vessel inspectors.

(b) Variance. If a boiler or pressure vessel cannot bear the ASME and national board stamping, details of the proposed construction material specifications and calculations shall be submitted to the chief inspector by the owner and user, and approval as a variance shall be obtained before construction is started. Design drawings and calculations shall be certified by a professional engineer currently registered in the state of Kansas. The boiler or pressure vessel shall be constructed and inspected as required by the national board inspection code (NBIC). (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-19 Combustion safeguards and waterside control appurtenances. (a) Each automatically fired boiler shall be protected against the peril of low water, furnace explosion, overpressure and overtemperature by equipping the boiler with controls and safety devices in accordance with the requirements of ASME CSD-1. ASME CSD-1 shall apply to new installations, used or secondhand

boilers, boilers moved and relocated, retrofitting of any boiler system having experienced incidental failure of its control equipment, major alterations of existing installations, and any boiler that may lack controls and safety devices.

(b) To implement the provisions of ASME CSD-1, manufacturers of new boilers shall provide documentation to installing contractors verifying that the boiler was constructed in compliance with CSD-1, Part CG-510. The testing and maintenance instructions obtained by the installing contractor and presented to the boiler owner or user shall be filed with the installation report and made available to the inspector upon request.

(c) Combustion and waterside safeties for boilers with burner inputs that exceed the 12,500,000 BTUH input limit of CSD-1 shall comply with all applicable ASME and NFPA standards. Applicable flame safeguard requirements for the prevention of furnace explosions shall be those set forth in the national fire code, sections 8501, 8502, 8503, 8504, 8505, and 8506. Combustion and waterside safeties for existing boiler installations with burner inputs that exceed the 12,500,000 BTUH limit of CSD-1 shall meet the applicable provisions of the edition of the ASME and NFPA standards in effect at the time they were constructed and installed. Whenever existing installations are considered unsafe, undergo extension repair due to accidental damage major alteration due to accidental damage, or lack a qualified 24-hour attendant, flame safeguard and other pertinent controls and safety devices shall be brought up to the current code requirements.

(d) Each owner, user, or installer of boilers using flame safeguard equipment shall document results of combustion safety testing. The frequency of testing shall be in accordance with the equipment manufacturer's recommendations but shall be conducted at least upon the initial start-up and shutdown of the boiler. An inspection and maintenance schedule shall be established and performed to comply with the boiler and combustion system manufacturer's recommendations. Documentation relative to the above testing shall be kept on permanent file at the boiler location and shall be made available to the authorized inspector upon request. The use of rebuilt or remanufactured flame safeguard equipment shall not be allowed. All boiler controls shall be listed as UL (underwriters laboratories), FM (factory mutual), or AGA (American gas association). (Authorized by and implementing K.S.A. 1999 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-20 New boilers, new boiler rooms, and boiler clearances. (a) Each owner, user, and installer of a new boiler shall be responsible for notifying the office of the chief inspector within 72 hours of a boiler installation. Each new boiler shall be inspected at the time of installation by an inspector duly commissioned in accordance with K.S.A. 44-918 through K.S.A. 44-922, and amendments thereto.

(b) Each new boiler having an external width of over 36 inches shall have no fewer than 18 inches of clearance between the bottom of the boiler and the floor line, with access for inspection. When the width of the boiler is 36 inches or less, the distance between the bottom of the boiler and the floor line shall be not less than six inches. Each new boiler that is not enclosed in a separate building or separate room shall be isolated from the public and employees by a fire-rated wall as determined by occupancy in NFPA life safety code handbook, 1997 edition.

(c) Each new boiler room shall have one or more means of exit as determined by the chief boiler inspector. Where more than one exit is provided, each shall be remotely located from the other. Each elevation of runway shall have at least two means of egress, each remotely located from the other.

(d) Each new boiler shall be located so that adequate space will be provided for the proper operation of the boiler and its appurtenances, for the inspection of all surfaces, tubes, water walls, economizers, piping, valves, and other equipment and for their necessary maintenance and repair. Specifications for all minimum clearances shall be provided by each boiler manufacturer and shall be listed in the manual provided to the installing contractor. In no case shall any clearance for access be less than those listed in section 1017 of the uniform mechanical code, 1997 edition. The installation instruction manual shall remain available to the authorized inspector upon the inspector's request. (Authorized by and

implementing K.S.A. 1998 Supp. 44-916; effective May 1, 1987; amended April 28, 2000.)

49-50-21 Boilers and other appliances fired with LP gas. Boilers and other appliances fired with LP gas shall not be installed below grade, or in pits or other depressions where LP gas could accumulate. This prohibition shall apply unless the system meets the following conditions:

- (a) Is equipped with an alarm system that sounds an alarm or with other approved alerting devices
- (b) shuts down all of the equipment in the space; and
- (c) is equipped with an approved exhaust system. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective April 28, 2000.)

49-50-22 Venting of atmospheric vents, gas vents, or bleed or relief lines. (a) Gas pressure regulators, pressure switches, safety shutoff valves, or any other gas control that has a threaded fitting shall be vented to the outdoors to a safe point of discharge.

(b) The atmospheric vent lines shall not be connected to any common or manifolded gas vent, or bleed or relief line.

(c) Atmospheric vent lines when manifolded shall be connected into a common atmospheric vent line having a cross-sectional area not less than the area of the largest vent line plus 50% of the areas of the additional vent lines.

(d) Gas regulators, pressure interlock switches, and all other fuel train components that require atmospheric pressure to balance diaphragms or other similar devices shall be provided with a pipe-threaded connection for a vent line. The vent line shall be extended outdoors to a safe point of discharge. A means shall be provided at the terminating point to prevent blockage of the line by foreign material, moisture, or insects. (Authorized by and implementing K.S.A. 1998 Supp. 44-916; effective April 28, 2000.)